

# **A Study of Alternatives for Projected Rotation Dates Used in Navy Enlisted Personnel Distribution, Studies & Analysis Effort**

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**Navy Personnel Research, Studies, & Technology**

# Approach

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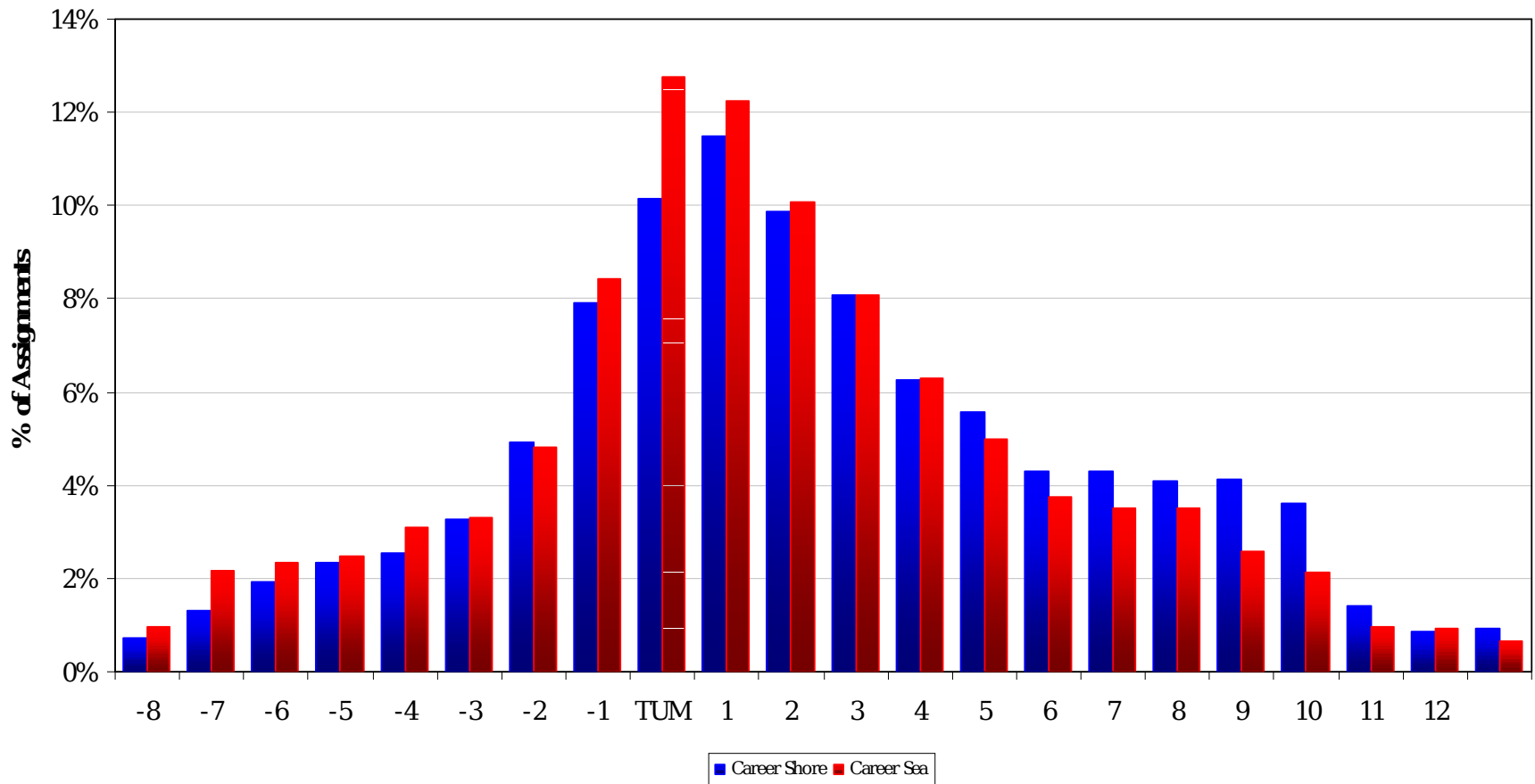
- **Identify the “problem”**
- **Develop a “hypothesis” concerning the problem**
- **Build a model -- that captures the root of the problem**
- **Verify whether the model represents behavior seen in the real world system**
- **Test alternative policies/actions to alleviate the problem (analysis)**
- **Recommend actions based of results of analysis**

# Project Overview

- **Problem:** Often, the job which an enlisted Sailor receives as an assignment is either before or after their Planned Rotation Date (PRD)
- **Characteristics:**
  - Jobs are unfilled for a period of time (known as a gap)
  - More than one Sailor is filling a particular job (known as an overlap)
- **Hypothesis:** The use of rotation windows vs. PRD (hard month) will increase the likelihood of a Sailor locating a job -- which will lead to fewer billet gaps and overlaps and shorter periods of time, whenever they occur

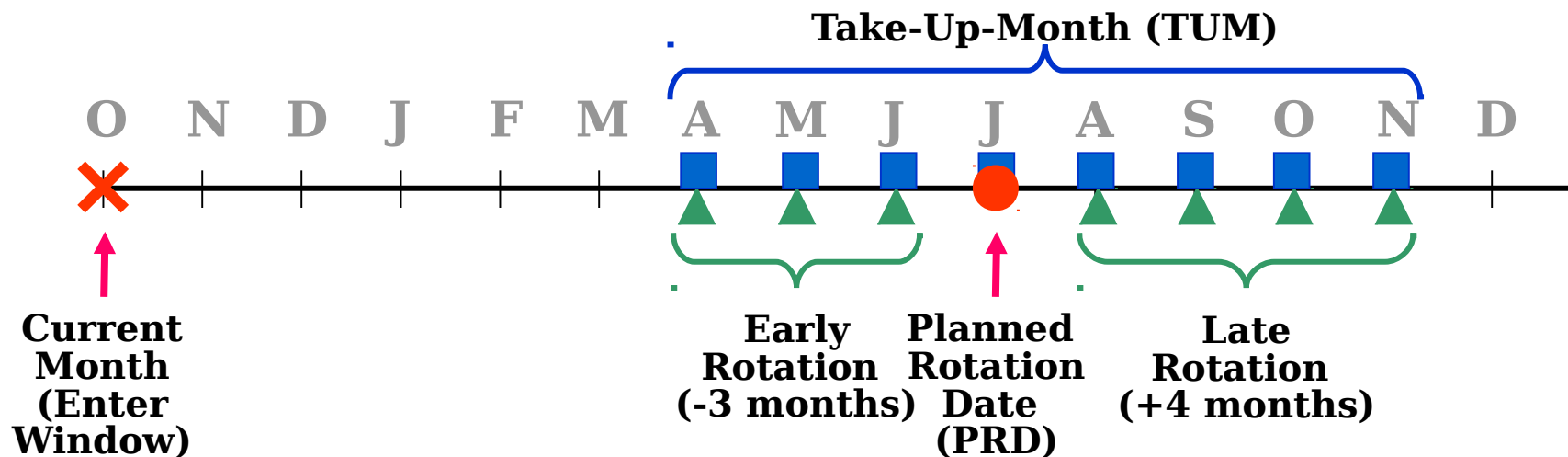
# Required Take-up Month (TUM) vs. Ordered Date of Arrival (EDA)

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# As-is Example ("Sailor X")

## Enlisted Assignment



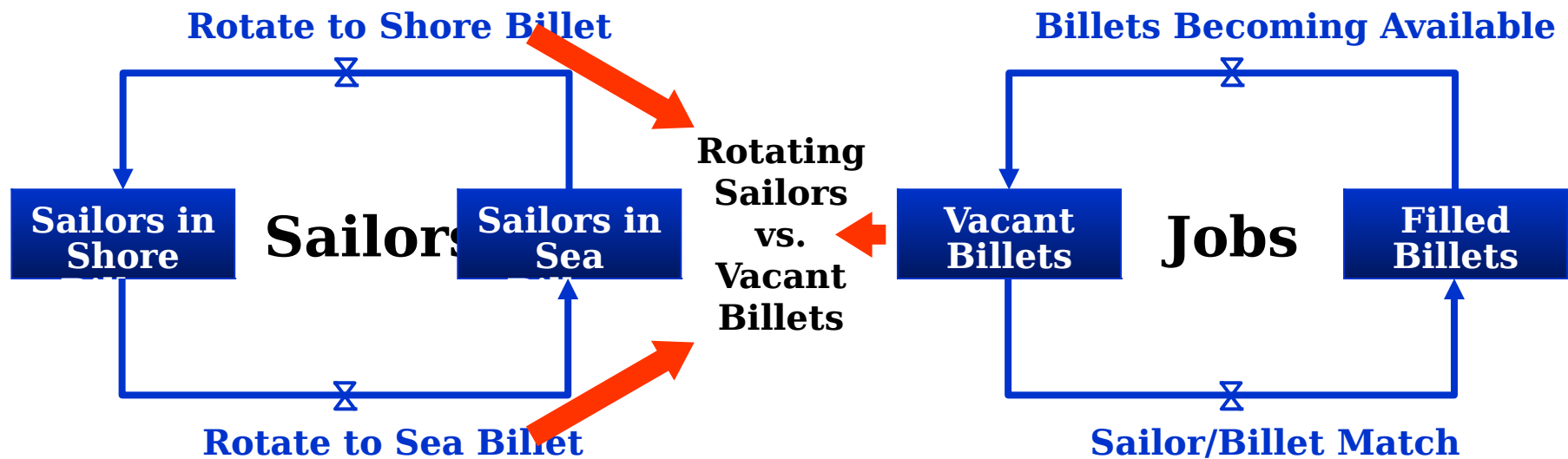
# Technical Method

- **Continuous time-based simulation**
- **Closed-loop**
- **Business rules**
  - 2 separate inventories**
    - › **Sailors (ID, sea/shore, PRD)**
    - › **Billets (ID, sea/shore, TUM)**
- **Assignment window (9 months)**
- **Early/late rotation policy (sea/shore)**
- **Tour lengths (sea/shore)**
- **Reporting delays (per assignment)**

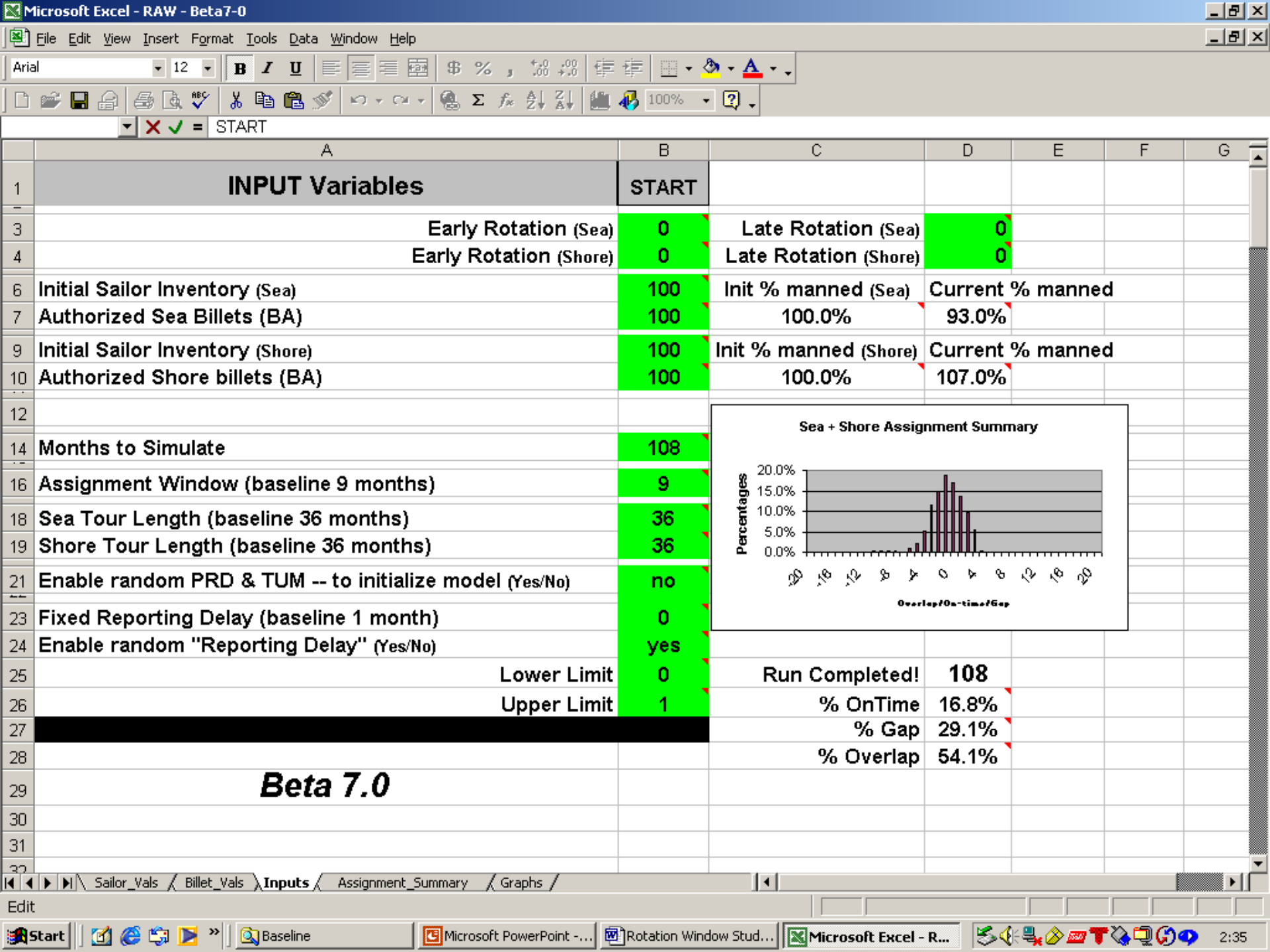
# Modeling Assumptions

- **Sailors rotate between sea and shore assignments**
- **Sailors are assigned to the first available billet (relative to time)**
- **PRDs are adjusted based on early/late rotation policy**
- **Reporting delays can occur**
- **Months are evenly weighted**
- **To initialize - every Sailor & billet has a scheduled date (PRD/TUM)  $\leq$  maximum tour length**

# Model Diagram



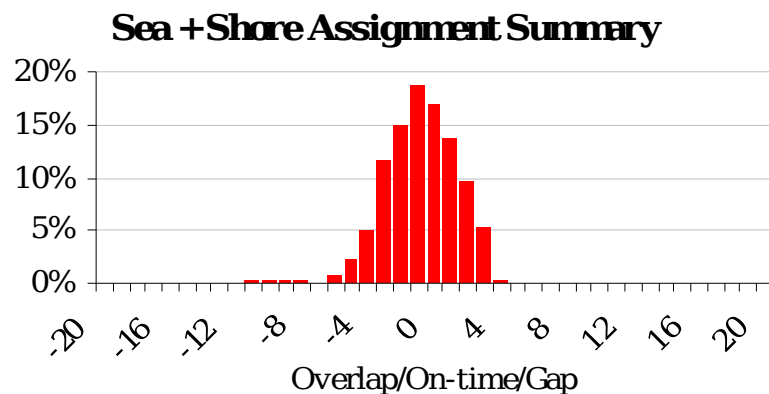




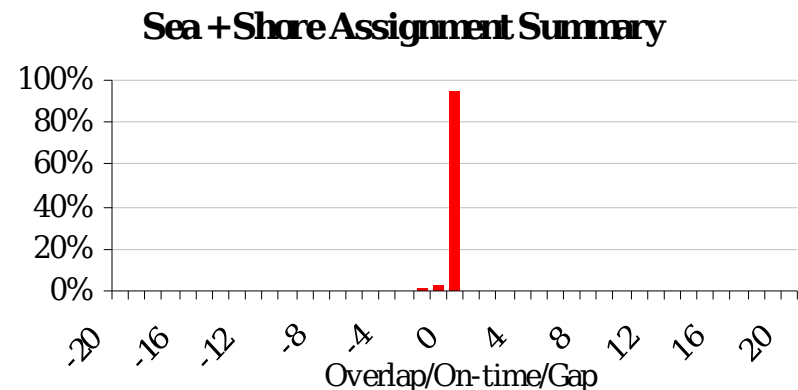
# Sample Model Output

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- 100 sailors with 100 billets authorized (100.0%) manned at sea
- 100% manned at shore (100.0%) 100 sailors with 100 billets authorized
- Sea and shore tour length are 36 months each
- Run length is 108 months (9 years)
- The assignment window is 9 months
- Reporting delays are randomly distributed between 0 and 1 month



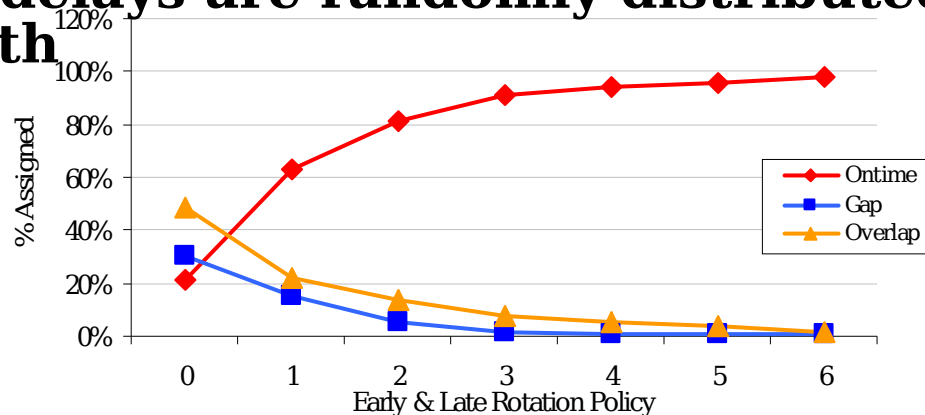
0/0 Early, Late Rotation



3/4 Early, Late Rotation

# Sample Analysis & Results

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# **Model Development & Analysis Team**

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